Notes.

THE president and council of the Royal Society announce that, in view of the economic condition of the country, the anniversary dinner of the society will not be held this year.

THE discovery of a fossil forest is reported at Anglon, Sardinia. Petrified palms, with well-preserved structure, are already known from a Miocene formation in the island, and details of the new find will be awaited with interest.

THE *Daily Mail* Imperial Fruit Show will be opened by the Right Hon. Sir Arthur Griffith-Boscawen, Minister of Agriculture and Fisheries, at the Crystal Palace on Friday, October 28, at 3 p.m.

A NEW series of geophysical discussions, to be held in the rooms of the Royal Astronomical Society, will be opened on Friday, November 4, at 5 p.m., with a discussion on "The Eötvös Gravity Balance." The chair will be taken by Col. Sir C. F. Close. Col. H. G. Lyons will open the discussion, which will be continued by Prof. C. V. Boys, Col. E. H. Grove-Hills, and Col. Sir G. P. Lenox-Conyngham.

THE 168th session of the Royal Society of Arts will be opened on Wednesday, November 2, at 8 p.m., when Mr. Alan A. Campbell Swinton, chairman of the council, will deliver an experimental address on "Wireless Telegraphy." Among the papers fixed for the meetings up to Christmas are the following: The Work of the Industrial Fatigue Research Board, by D. R. Wilson; Modern Buildings in Cambridge and their Architecture, by T. H. Lyon; The Coming of Age of Long-Distance Wireless Telegraphy and some of its Scientific Problems (Sir Henry Trueman Wood Lecture), by Prof. J. A. Fleming; and The Preservation of Stone, by Noel Heaton.

AT the Royal Horticultural Society on Tuesday and Wednesday of next week Lord Ventry will show New Zealand flax-plants (*Phormium tenax*) grown at Dingle, Co. Kerry, and twine, etc., prepared from the plants grown in Ireland. The exhibit will be an interesting one as the flax is growing thoroughly well in south-west Ireland. The leaves are 10 ft. 6 in. long, and Lord Ventry has proved that the Dingle peninsula can produce binder-twine for the whole of the United Kingdom (estimated at 20,000 tons). He has been working hard with the flax, and his efforts are very interesting and worthy of careful attention. An account of his experiments was given in the *Kew Bulletin*, 1919, p. 146, with plates, and the first report on the Flax Production Branch of the Ministry of Agriculture appeared a couple of years ago (see NATURE, October 2, 1919, vol. 104, p. 98).

AT the annual statutory meeting of the Royal Society of Edinburgh, held on October 24, the following office-bearers and council were elected: *President:* Prof. F. O. Bower. *Vice-Presidents:* Sir G. A. Berry, Prof. W. Peddie, Sir J. A. Ewing, Prof. J. W. Gregory, Major-General W. B. Bannerman, Dr. W. A. Tait. *General Secretary:* Dr. C. G. Knott. *Secretaries to Ordinary Meetings:* Prof. E. T. Whittaker, Prof. J. H. Ashworth. *Treasurer:* Dr. J. Currie. *Curator of Library and Museum:* Dr. A. Crichton Mitchell. *Councillors:* Mr. H. M. Cadell, Prof. A. R. Cushny, Prof. F. G. Baily, Mr. G. J. Lidstone, Dr. R. Campbell, Principal J. C. Irvine, the Hon. Lord Salvesen, Prof. J. Arthur Thomson, Dr. H. S. Allen, Sir R. B. Greig, Dr. J. Ritchie, and Dr. E. M. Wedderburn.

THE new board of the Institute of Physics is constituted as follows:—*President:* Sir J. J. Thomson. *Past-President:* Sir Richard Glazebrook. *Vice-Presidents:* Prof. W. H. Eccles, Major E. O. Henrici, Prof. C. H. Lees, and Mr. C. C. Paterson. *Treasurer:* Sir Robert Hadfield, Bart. *Hon. Secretary:* Prof. A. W. Porter. *Members:* Inst. Comdr. T. Y. Baker, Mr. J. E. Barnard, Dr. R. S. Clay, Mr. W. R. Cooper, Prof. C. L. Fortescue, Prof. Andrew Gray, Dr. G. W. C. Kaye, Sir Charles Parsons, Mr. C. E. S. Phillips, Dr. E. H. Rayner, Prof. S. Russ, Mr. F. E. Smith, Sir Napier Shaw, and Mr. R. S. Whipple. Particulars relating to the institute can be obtained from the secretary, Mr. F. S. Spiers, O.B.E., 10 Essex Street, London, W.C.2.

THE establishment of a diploma in medical radiology and electrology by the University of Cambridge was made at the instigation of the British Association for the Advancement of Radiology and Physiotherapy (B.A.R.P.). This association has also been instrumental in forming a Society of Radiographers, having as its object the consolidation of the position and improvement of the status of the lay assistant who carries out the routine work at hospitals under the direction of the medical head of the department. The council of the Society of Radiographers has arranged for an examination to be held yearly, and instruction for this examination is being greatly facilitated by the co-operation of the Institution of Electrical Engineers. Successful candidates will be entitled to use the letters M.S.R. These dual activities of the B.A.R.P. are a good augury of the desire among radiologists to improve the status of medical work involving the use of the various forms of electricity and radiation.

THE Government of Czecho-Slovakia has recently concluded an agreement with the Imperial and Foreign Corporation which, it is expected, will have important consequences for this country in securing a supply of radium for medical uses. Under the agreement the output of radium from the celebrated State mine at St. Joachimsthal (now Jachymov) for the next fifteen years will be loaned to a new company that has been formed, known as the Radium Corporation of Czecho-Slovakia. The latter will start a laboratory and offices in this country for the sale and hire of radio-active preparations, in the first place to the medical profession. A quantity of two grams of radium element, as the first instalment under this agreement, was recently brought from Prague by

Prof. Soddy, and a similar amount is expected annually. The Czecho-Slovakian Government retains its proprietary rights in the radium, which is to be returned at the termination of the agreement. By this enterprise a close connection between this country and the chief European source of radium has been established which, it is to be anticipated, will prove ultimately of advantage to workers in this subject.

THE first annual report of the Electricity Commissioners (H.M. Stationery Office, price 3*s.* net) is of interest. It shows clearly that although improvements in the existing conditions of electric power supply cannot be realised as rapidly as was anticipated when the Act of 1919 was passed, yet substantial progress has been made in securing the co-operation and agreement of the authorities in particular districts. It is not a problem of starting *ab initio* to develop a comprehensive and standardised system of distribution in the light of our present-day knowledge and technical practice. There exist many heterogeneous systems of supply which have to be adapted, modified, and expanded to meet the growing needs of the community. The present financial stress has also proved a barrier to rapid developments. The standardisation of 50 as the frequency of supply proved impracticable, and so the subsidiary frequencies of 40 and 25 had to be permitted. It is satisfactory to note that the Commissioners have approved in several cases of very high voltages for the transmission of power. In Northumberland and Durham, for instance, the electric energy will be distributed from the main generating stations to the sub-stations at a pressure of 66,000 volts. From Woolwich to Erith the pressure of transmission will be 33,000 volts. With these high voltages appreciable economies can be effected. The Commissioners have now come to a stage in their proceedings where their decisions will affect adversely many interests, but luckily they have secured the universal esteem of the profession

THE Geographical Society of Paris celebrated its centenary in July last. Having been founded in 1821, it is the oldest geographical society in the world, and nine years senior to the Royal Geographical Society. In commemoration of the event the society has devoted an enlarged number of *La Géographie* (July–August) to a history of the society and a record of the centenary celebrations. From the year of its foundation, under the presidency of the Marquis de Laplace, the society has grown in usefulness and influence. An outgrowth of the society in 1870 was the foundation of the numerous French provincial geographical societies, which now number more than twenty, while the growing overseas interests of France led in 1876 to one branch of the society becoming the Société de Géographie commerciale with an independent organisation. The International Geographical Congresses which met from time to time before the recent war were inaugurated by the society at Paris in 1871, and Paris was again the meeting-place in 1875 and 1889. From 1822 the society has published its Bulletin, now known as *La Géographie,* which has always been particularly rich in African travel. In addition, it has from time to time published a large number of separate geographical works. The centenary celebrations included a reception by the president of the society, Prince Roland Bonaparte; a meeting presided over by President Millerand, at which addresses were presented by various geographical societies, including the Royal Geographical Society, represented by Sir F. Younghusband; visits to the Bibliothèque nationale and the Service hydrographique de la Marine; an afternoon municipal reception at the Hôtel de Ville: and the concluding banquet.

THE annual general meeting of the Chaldæan Society was held at the Great Northern Hotel, King's Cross, on Saturday, October 15. The president, Mr. J. Hargreaves, in reviewing the work of the year and the progress of the society, stated that there were now seven local sections, as against two last year. The first of these sections to be formed, at Luton, had had a very busy season, while those at Letchworth and Ipswich were now well established. The two London sections, north and south, in spite of the large population, or rather because of it, still found it difficult to carry out satisfactory astronomical work. In this sense their record was comparatively disappointing. The Rev. D. R. Fotheringham, editor of *The Chaldaean,* advised the society to pay special attention to naked-eye work. He suggested that members should watch for and record specially:—(1) The first appearance of planets after conjunction with the sun; (2) every appearance of Mercury; (3) any appearance of Vesta, other minor planets, naked-eye comets, or Uranus; (4) observations of naked-eye variable stars like Mira Ceti or Algol; (5) haloes; and (6), for those with keen sight, the careful mapping of the Milky Way. The 1921 eclipse report was formally presented to the meeting. Detailed accounts were submitted from Lochmaddy and Thurso, whence the eclipse had been seen in its annular form, and tabulated reports were presented from fifty-six other stations, embodying temperature records, appearance of stars, effect on animals, etc. A discussion followed on the relationship of local sections and the central body of the society. The following were elected officers for the year:—*President:* Mr. J. Hargreaves. *Secretary:* Mr. E. W. Foster. *Treasurer:* Dr. J. K. Fotheringham. *Librarian:* Mr. G. S. Clark Maxwell.

PARAGRAPHS have lately appeared in the daily Press reporting the occurrence of oil in a water well at Bosham, near Chichester, Sussex, and in particular the *West Sussex Gazette* of October 13 gave an account of the visit of an inspector from the Petroleum Department to this well. The facts briefly are as follows:—The well is situated in the garden of Mr. H. Richardson, of Bosham. Recently a clear oil was noticed on the surface of the water, and it is reported that no less than 100 gallons of "almost pure paraffin" were later obtained. The inspector apparently did not commit himself as to whether the oil was a natural or fortuitous occurrence, but the idea that this is indeed a natural oil has gained currency, notwithstanding the obvious technical objections to such a view. Similar oil finds have been reported before in this country. In that near Peterborough a few years ago, leakage from surface stores was ultimately held to account for the "discovery." At Bosham, on the other hand, we are informed that there are no likely stores near at hand from which the oil could have been derived by leakage, and this has done much to inspire the prevailing optimism with regard to the occurrence. Our only comments at this stage are: first, the possibility of floating oil on the water of Bosham Creek (a tributary of Chichester Harbour) in these days of oil-fired ships is not to be passed over, and the well may quite conceivably have suffered contamination from this source; secondly, Bosham itself is situated on the chalk, here brought to the surface by the Portsdown anticline; one does not usually associate oil and chalk, in fact the only possible oil-bearing horizon here (and that an extremely unlikely one) is the Kimmeridge Clay, which lies at far too great a depth to be taken into serious consideration. The anticline, while structurally favourable from the point of view of oil accumulation, is scarcely likely to lead anyone but the "get-oil-anywhere" fraternity astray. Its occurrence at the same point as this supposed oil find is merely one of those strange coincidences which are absolutely devoid of significance.

IN a Chadwick public lecture delivered on October 20 on the subject of "Plant Diseases and their Relation to Diseases in Man," Prof. V. H. Blackman said that the plant pathologist is faced by the very wide range in the degree of association of the host and the parasitic organism. At one extreme there is the condition where the fungus is almost purely superficial and the injurious effect is mainly indirect; at the other extreme there are associations of host and fungus, known as symbiosis, in which association benefits both the organisms. Between these two extremes there are all degrees of association of the two organisms. Plant-cells, when once penetrated, are almost always killed, and plants generally depend for immunity from disease on their capacity to keep the parasite out or to render it harmless by enclosing it within layers of cork. The immunity of certain wheats from rust disease has, however, been shown to be due to the "hypersensitiveness" of the tissues, which succumb so rapidly to the attack of the fungus that the parasite is starved. It is only in cases of symbiotic association that there has been observed any digestion of the invading organism comparable with phagocytosis in animals; in the orchids also there is evidence that plants once infected are immune from further attack. No production by the attacked plant of lethal substances comparable with antitoxins, bacteriolysins, etc., have been observed, so the possibility of artificial immunisation of plants by the use of vaccines or sera would seem to be very unlikely. Apart from the difficulty of distributing such vaccines to the various organs, the growing plant is continually producing new organs which would require immunisation. Since disease is abnormal physiology, little further progress will be made in the elucidation of the nature of plant diseases without further knowledge of the normal physiological processes of the associated organisms.

ON the occasion of the Prince of Wales's recent visit to the Australian Commonwealth, he was presented by the State of Queensland with a gold-mounted casket of Queensland beanwood containing a collection of the gemstones for which the State is famous. In the *Queensland Naturalist* (vol. 3, No. 1) Mr. B. Dunstan, the Government geologist, describes the twenty-nine stones in the collection, giving the details of the provenance of each, and a general account of their properties and distribution throughout the State.

THE *Museums Journal* for October contains a paper by Mr. L. H. Weston Klingender—who until the outbreak of war was curator of the Goslar Museum—on the organised co-operation of museums in Germany. There has long been talk in our own country of a closer union between the larger and smaller museums, and this interesting article should be of practical use to those who are considering such a scheme. The number also contains an appreciative notice of the late Dr. Henry Woodward from the museum point of view, and a critical but friendly account of the Association generale des Conservateurs des Collections publiques de France.

IN *Science Progress* for January last the case for the inheritance of acquired characters was presented by Prof. E. W. MacBride. The challenge thus thrown down has been accepted by Mr. Julian S. Huxley, who states with considerable force in *Science Progress* for October the case for the chromosome theory of heredity advocated by Prof. Morgan and his school. Mr. Huxley summarises the evidence on which the theory is based and the bearings of recent work on the hypothesis, and points out certain implications of the theory which are not usually dealt with in the text-books. He is in whole-hearted agreement with Prof. Morgan, and believes that his theory of heredity is the only one which allows of the synthesis into one harmonious whole of the many, and apparently antagonistic, results of recent work in genetics, cytology, and experimental physiology and zoology.

THE *Journal of Pomology* (vol. 2, No. 4, August, 1921), published by Messrs. Bunyard, Maidstone, contains the reproduction of a very scarce work entitled "The Orchard and Garden," published anonymously in 1602. For many years only one copy was known to exist, that being in the Cambridge University Library, but recently a second copy came to light, and was secured for the Lindley Library of the Royal Horticultural Society. The importance of choosing suitable soil and locality is emphasised, and grafting is treated at considerable length, both from like to like and "with contrary kindes." Among the divers sicknesses which affect the trees are canker and all kinds of caterpillars; for the former excision is recommended, for the latter diligent searching for the eggs which "lie hidden in a cobbwebbe," which should be burned, for "the fire consumeth all things." In a short article in the same number by E. Richmond Swales, entitled "Apple Canker: Two Centuries' Practice in its Control," the writer suggests that we cannot claim to have improved upon the practice of two hundred years ago, namely, the clean cutting out of every canker spot and the treating of a fatally cankered tree as fit for nothing but the fire.

FEW of our readers, and certainly none who have any knowledge of the recent advances made in the subject of ballistics, would be disposed to dispute Dr. G. F. Hull's statement that the solution of the present-day problems of ordnance depend "on the applications of the precise experimental methods of modern physics." As a member of the technical staff of the chief of ordnance at Washington, Dr. Hull has had exceptional opportunities of watching the rapid progress of the last few years, and the reprint of his address to the engineering section of the Franklin Institute on the applications of physics to ordnance problems, which appears in the September issue of the journal of the institute, is the most public statement which has been made of facts hitherto regarded as profound secrets. Dr. Hull shows how the pressure within a gun during discharge may be measured by the electric charge it generates on crystals—piezo-electricity—and how the flight of the projectile can be followed by its electromagnetic effect on coils through which it passes, and in both cases the measurements may be made with an accuracy unattainable by the older methods.

AN interesting paper by Prof. G. Urbain on "The Energetic Bases of the Atomic Theory" appears in the *Revue Scientifique* of October 8. Some results may be obtained equally well from energetics and from the atomic theory, although the points of view adopted are different. The energetic conditions necessary for a molecular theory are examined and thermo-elastic and magnetic phenomena considered. The term "homeömerism," on the analogy of "isomerism," is introduced to denote the existence of groups of substances of different composition which have at least one series of differential coefficients identical. The laws of Raoult may be summarised in the statement that isotonic solutions in the same solvent are thermo-elastically homeömeric. Prof. Urbain's point of view is in many ways novel and interesting.

IN the *Journal of the Society of Glass Technology* for August, Mr. J. R. Clarke discusses the effect of rays from radium, X-rays, and ultra-violet light on glass. The α- and β-rays alone were productive of coloration in the glasses examined, which contained various metallic oxides. The colouring is supposed to be due to the formation of colloidal particles in the glasses, the presence of which may be explained by the action of the two kinds of rays on dissociated ions already present in the glasses. Fluorescence is held to be due to mechanical bombardment of the glass molecules by the rays.

THE July issue of the Journal of the Chemical Society contains a communication by E. C. C. Baly, I. M. Heilbron, and W. F. Barker on the photosynthesis of formaldehyde and carbohydrates from carbon dioxide and water. An aqueous solution of carbon dioxide yields formaldehyde when exposed to radiation of wave-length $200\mu\mu$. Polymerisation occurs, with formation of reducing sugars, in light of wave-length $290\mu\mu$. Substances were found which increased the yield of formaldehyde by protecting it from polymerisation. The photosynthesis of formaldehyde from carbon dioxide and water is catalysed by certain coloured basic substances such as colloidal uranium and ferric hydroxides, malachite-green, and methyl-orange. Photosynthesis then takes place in visible light. Chlorophyll appears to be an ideal photocatalyst for both stages of carbohydrate synthesis from carbon dioxide and water, and its function in green plants is made clear by these investigations, which throw a good deal of light on a matter which has long been obscure.

THE shipbuilding returns for the quarter ending September 30 have just been published by *Lloyd's Register,* and are commented upon in the *Engineer* of October 14. After making allowance for vessels upon which work has been suspended, a total of 2,095,000 tons under construction in the United Kingdom is obtained. For the quarter under review the tonnage commenced amounted to only 51,343 tons, a decrease of 455,000 tons as compared with the last quarter of 1920. This is perhaps the most significant figure in the return as indicating the very unfavourable outlook for the immediate future. At the present time there are under construction throughout the world 140 vessels of more than 1000 tons for the carriage of oil in bulk, with a total tonnage of 931,813 tons. Of these, 81 are under construction in the United Kingdom, making an aggregate of 527,791 tons, and 28 totalling 222,292 tons in the United States. The tonnage of vessels under construction which are to be fitted with internal combustion engines amounts to 405,941 tons.

THE Journal of the British Science Guild for October contains the annual report of the executive committee and a summary of the proceedings at the annual meeting held in June last. References are made to the deaths of Sir Norman Lockyer, the distinguished founder of the Guild, and Sir William Mather, a trustee and original member, both of whom rendered valuable services extending over many years. The journal contains the addresses delivered at the annual meeting by the president (Lord Montagu of Beaulieu) and by Dean Inge, who emphasises the value of the forces of science and religion in promoting a solution of present industrial problems. An interesting summary is given of a recent series of articles by the president on road reform, and Sir R. A. S. Redmayne contributes a suggestive article on the importance of research in the development of the mineral industries. Among recent activities of the Guild may be mentioned the preparation of a catalogue of British scientific and technical books, comprising more than 6000 titles. We observe that attention continues to be devoted to the utilisation of science in public departments, in which connection the control and administration of the Post Office is discussed. An important recent step has been the development of local branches or groups in the chief provincial cities, which will doubtless be of value in extending the Guild's sphere of usefulness. The main part of an address, entitled "The Message of Science," delivered by Sir Richard Gregory before the British Association, is reproduced as likely to be of service to organisers of provincial groups.

Messrs Wheldon and Wesley, Ltd., 38, Great Queen Street, W.C.2, have just issued a most useful botanical catalogue (New Series, No. 2), containing particulars of upwards of 3000 second-hand works offered for sale by them. The catalogue is very conveniently classified under the following headings, making reference easy: Early gardening, early herbals, modern gardening, cacti and succulents, flower garden and fernery, roses, fruit and vegetable garden, grape vine and wine, greenhouse and hothouse, landscape gardening and planting, orchids, plant breeding, etc., early agriculture and husbandry, modern British agriculture, grasses, forage plants, and weeds, livestock, tropical and foreign agriculture and gardening, food plants, beverages, etc., forestry and timber, industrial plants, medical botany, and addenda.

Our Astronomical Column.

The Total Solar Eclipse of September, 1922.—Prof. Campbell announces in *Popular Astronomy* for October that it is proposed to send an expedition from the Lick Observatory to Wollal, in West Australia, to observe this eclipse. The difficulties of landing are considerable, but not insuperable, and the prospects of good weather are better there than at any other station. The principal item on the programme is the Einstein problem. In order to shorten the necessary stay at Wollal it is intended to take comparison plates of the eclipse field at Tahiti on the voyage out, its latitude being nearly the same as that of Wollal. Another star field, culminating at night, will be photographed at both stations, to strengthen the basis of comparison.

Rubidium in the Sun.—Dr. M. N. Saha predicted that the lines of rubidium might be detected in sunspot spectra, though invisible in the ordinary solar spectrum owing to considerable ionisation, which is less in the sunspot, where the temperature is lower. Prof. H. N. Russell has examined some fine spot spectra photographed with the 150-ft. tower telescope at Mount Wilson. He finds the two principal rubidium lines at 7800·29 and 7947·64 distinctly visible, the agreement in position being exact, and the relative strength being also in accord. He therefore considers the presence of rubidium established, and notes that the lines of sodium and potassium are also strengthened in the spot spectrum, from a similar reason.

Comets.—Mr. Innes and Mr. Wood obtained numerous observations both of Encke's and Pons-Winnecke's comets at the Johannesburg Observatory during July and August. Those of Encke are printed in *Astr. Nach,* No. 5123. Even by August 8, only twenty-six days after perihelion, the comet had become extremely faint, and it was looked for in vain on August 22 and 23. It has frequently been observed that this comet is more difficult to observe after perihelion than before it. The sun's heat appears to produce a rapid expansion of the coma, rendering it ill-defined.

Dr. W. Baade, of Bergedorf Observatory, obtained a photographic observation of Reid's comet on October 1d. 15h. 3m. 54s. G.M.T., its position referred to the equinox of 1921·0 being R.A. 8h. 27m. 39·38s., N. decl. 30° 11′ 19·5″; the magnitude was 14, and the indicated correction to Mr. Ebell's ephemeris was −19s., −3·2′. This observation, made six and a half months after discovery, will be of use in correcting the orbit elements.

Finding of the Minor Planet Alinda.—The search for this very interesting planet was referred to in Nature for October 20. *Astr. Nach.* Circ., No. 32, states that the planet has been found at the Königstuhl Observatory. The following observations were made (referred to equinox of 1921·0):—G.M.T. October 10d. 14h. 1·2m., R.A. 3h. 0m. 7·15s., S. decl. 6° 35′ 58·1″, mag. 14·0; G.M.T. October 12d. 14h. 33·4m., R.A. 3h. 0m. 32·96s., S. decl. 7° 0′ 52·0″, mag. 13·8. Stracke's value of the mean daily motion requires the correction of +0·74″, which is satisfactorily small. The planet is likely to be followed for several months, as its linear motion in perihelion is nearly the same as that of the earth. During some revolutions of this planet the Jupiter perturbations will be large, and it will be of interest to investigate the alteration of the perihelion distance, which has the value 1·182, very little greater than that of Eros.

Observations of Variable Stars.—Mr. W. J. Luyten has published, as a thesis for his doctor's degree, the results of observations of variable stars made by him at Deventer and Leyden during the years 1915–19. His equipment gradually increased from a field-glass and a 3-in. telescope to the 6-in. equatorial at Leyden. His vision is unusually acute, and he could observe stars down to magnitude 13·7 with the 3-in. and to 14·8 with the 6-in. The stars observed include all types of variables; in the case of Algol stars nothing was attempted beyond the time of minimum, the light-curve being derived with much greater accuracy from the use of the photo-electric cell; but light-curves were found for the Cepheids, the note being made that minor fluctuations in the curves are found in the case of S Sagittæ only. New periods and formulæ are given for many of the long-period variables. ζ Geminorum is found to conform exactly with a sine-curve, the mean magnitude being 3·938 and the amplitude 0·165. In the case of SU Cygni, Luizet's period is shortened by 0·000151d. to 3·845472d. It is noted that there is a great discordance in the interval from maximum to minimum found by different observers.

Several stars are then discussed for which Prof. Turner and others had suggested sudden changes of period or of phase. Mr. Luyten's conclusions are more in favour of slow progressive change of period than of sudden jumps. He states that the observations and discussions will subsequently be published at greater length in *Annalen van de Sterrewacht te Leiden*.